Signaling components in the cold stress response of barley

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As a consequence of climate change, occurrence of erratic weather conditions is increased generating temperature, drought or osmotic stress for cereals and other cultivated plants causing significant loss of production and decrease of yield. This phenomenon intensified the need for enhanced abiotic stress tolerance in cereals. To improve the adaptation ability of the crop plants, it is very important to understand how these plants are able to percept environmental signals and how these signals are converted to molecular response in the plants. Thus, the investigation of the major signal transduction mechanisms and identification of signaling components involved in abiotic stress tolerance is very important not only in model organisms, but in cultivated plants as well. In the present work components of the phospholipid signaling were identified and investigated in barley and their influence on the cold response was also studied. In details, a phosphatidylinositol transfer protein and a phosphatidylinositol 4-kinase were identified in barley using homology search and their biochemical and cell biological characterization was performed. Moreover, the role of this signaling pathway in the cold regulation of the CBF transcription factors was also studied.